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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/676,090

10/02/2003

Sachiko Hattori

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06/20/2006

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EXAMINER

CHACKO DAVIS, DABORAH

ART UNIT

PAPER NUMBER

1756

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/676,090

Applicant(s)

HATTORI, SACHIKO

Examiner

Daborah Chacko-Davis

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/03, 08/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, and 7-8, are rejected under 35 U.S.C. 102(e) as being anticipated by U. S. Patent No. 6,645,851 (Ho et al., hereinafter referred to as Ho).

Ho, in the abstract, in col 5, lines 25-67, in col 6, lines 1-50, in col 7, lines 27-64, and in figures 2-3, 5-6, 8-9, and 12, discloses filling photo resist in contact hole patterns or trenches (burying a resist) comprising forming an interlayer (dielectric layer) on a substrate, forming an opening in the interlayer (holes, references 13a thru 13e), forming a second layer on the dielectric layer (including the opening, conformally forming the second layer, reference 23), applying a photoresist layer on the interlayer (dielectric layer) with the openings (or on the second layer with the openings, see figure 8), patterning the photoresist through a mask so as to leave a portions of the photoresist in the via holes (burying the resist in the openings), and using the photoresist in the vial holes as mask to etch the interlayer (dielectric layer) that is exposed while masking the via hole (or etching the second layer, reference 23, while the photoresist masks the bottom portions of the via hole) (claims 1-2, and 7-8).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3-6, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,645,851 (Ho et al., hereinafter referred to as Ho) in view of U. S. Patent No. 5,792,680 (Sung et al., hereinafter referred to as Sung).

Ho is discussed in paragraph no. 2.

Ho, in col 6, lines 18-31, discloses that the resist is either a positive resist or a negative resist (DNQ or novolac), and that the resist patterned via a corresponding mask (claims 3-6).

The difference between the claims and Ho is that Ho does not disclose that the light shielding portion of the mask is smaller in area than the opening, and that the light-transmitting portion of the mask is smaller in area than the opening.

Sung, in col 14, lines 17-53, discloses that the transparent portions of the mask for the positive resist or the opaque portions of the mask for the negative resist is smaller in dimension than the pattern formed in the photoresist.

Therefore, it would be obvious to a skilled artisan to modify ho by employing smaller dimensioned mask-transmitting and mask-opaque areas as suggested by Sung because Ho, exposes the resist via a mask such that resist is only left in the via holes

and Sung, in col 14, lines 16-59, discloses that using a mask pattern of smaller dimension results in a decrease in pitch distance i.e., increases pattern density.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

June 14, 2006.


JOHN A. MCPHERSON
PRIMARY EXAMINER